

Message Text

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ACTION EB-07

INFO OCT-01 CIAE-00 COME-00 DODE-00 NSAE-00 TRSE-00 EUR-12

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TO SECSTATE WASH DC 6019

C O N F I D E N T I A L SECTION 01 OF 03 OECD PARIS 06712

EXCON

E.O. 11652: XGDS1

TAGS: ESTC, COCOM

SUBJECT: COCOM LIST REVIEW: IL 1757 - SEMICONDUCTOR
MATERIALS

REFS: A. COCOM DOC REV (74) 1757/1

B. OECD PARIS 26251

C. OECD PARIS 2459

D. STATE 29344

E. COCOM DOC REV (75) 1757/2

F. STATE 46872

SUMMARY: ON 12 MARCH ALL DELEGATIONS CONTINUED TO SUPPORT THE BELGIAN PROPOSAL TO DELETE SUBITEMS (A) AND (B). THE US PRESENTED THEIR VIEWS ON THE MATERIALS AND BLOC CAPABILITIES FOR PRODUCING HIGH QUALITY PRODUCTS. OTHER DELEGATIONS GAVE THEIR EXPERIENCES WITH BLOC PRODUCED MATERIALS, STATING THAT SUCH MATERIALS HAD PERFORMED AS WELL AS THEIR OWN. THEY HAD BEEN ABLE TO TRUST STATED VALUES IN BROCHURES AND WERE CONVINCED THAT THE BLOC WAS MORE THAN SUFFICIENT IN PRODUCING HIGH QUALITY SEMICONDUCTOR MATERIALS FOR THEIR OWN USE WITH SURPLUS AVAILABLE FOR EXPORT. IN ATTEMPTS TO BREAK THE IMPASSE, ITALY AND BELGIUM SUGGESTED COMPROMISE USING SPECIFICATIONS OR PARAMETERS TO DEFINE OUT NON-STRATEGIC FORMS OF SILICON AND GALLIUM COMPOUNDS. UK
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TABLED AN EXCLUSION NOTE FOR SELECTED GALLIUM COMPOUNDS

WHICH HAVE HEAVY USAGE IN THE LED AREA. JAPAN MENTIONED THEIR ATTEMPT TO PRODUCE SPECIFICATIONS IN REF C AND ASKED US TO EXPLORE THE SUGGESTION FOR PARAMETRIC EXCLUSION OF SOME OF THESE MATERIALS. BELGIUM MAINTAINED PROPOSAL TO DELETE SUBITEM (A) BUT WITHDREW DELETION OF SUBITEM (B) SUPPORTING COMPROMISE APPROACH. US PROPOSAL FOR NEW SUBITEM (D) MET WITH RESERVES BY ALL DELEGATIONS. THE MATERIAL IS NEW ENOUGH SO AS TO BE UNKNOWN TO MOST DELEGATIONS. DELEGATIONS REQUESTED MORE DESCRIPTIVE INFORMATION, E.G. DATA SHEETS, BROCHURES, ETC. ACTION REQUESTED: AS IN PARAGRAPH 8. END SUMMARY.

1. BELGIAN DELEGATION OPENED DISCUSSION REFERRING TO ROUND I PROPOSAL AND EVIDENCE SUPPORTING DELETION OF SUBITEMS (A) AND (B). THE US GAVE A SUMMARY STATEMENT CITING THEIR EVALUATION OF BLOC CAPABILITY EVIDENCE, INCLUDING BLOC BROCHURES AND MATERIAL SAMPLES WHICH US COMPANIES HAD OBTAINED FROM BLOC SOURCES. THEY POINTED OUT THAT THEIR INFORMATION SHOWED WIDE VARIATIONS IN MATERIAL QUALITIES SUCH THAT BROCHURE DATA WAS NOT RELIABLE. THEY NOTED THAT THE INFERIOR QUALITY OF BLOC MATERIALS PREVENTED THEIR DIRECT UTILIZATION IN US DEVICE MANUFACTURE. THE MATERIALS GENERALLY NEEDED TO BE REPROCESSED BEFORE USE IF US STANDARDS WERE TO BE MET. FINALLY, US QUOTED FROM HEWLETT - PACKARD INFORMATION CONCERNING LED TYPE GALLIUM ARSENIDE PHOSPHIDE OBTAINED FROM USSR, NOTING THE QUALITY TO BE SO INFERIOR THAT CONSTANT COLOR QUALITY OF DIODES WAS UNATTAINABLE.

2. FRANCE EXPRESSED SURPRISE AT THE US CONCLUSIONS AND WANTED TO KNOW ON WHAT BASIS THE PRODUCTS WERE COMPARED,

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WHAT THE PRODUCTS WERE, AND WHAT US COMPANIES WERE DOING THE TESTING. THEY BELIEVED SOME OF THE COMPARISON PROBLEMS WERE BECAUSE OF RELIANCE ON CATALOG DATA, BUT CATALOGS WERE QUITE FREELY AVAILABLE AND EXCHANGED BETWEEN FREE WORLD AND BLOC ORGANIZATIONS. US REPLIED THAT THEY WOULD NOT DEAL WITH COMPANY NAMES RE PERFORMANCE OF COMPARISON TESTS, BUT TESTS INVOLVED ELECTRONIC PARAMETERS USUALLY USED IN QUALITY CHECKING OF INCOMING MATERIAL, E.G. DISLOCATION DENSITIES, RESISTIVITIES, CARRIER CONCENTRATIONS, ETC. THE PRODUCTS US WAS CITING WERE IN BOTH THE SILICON AND GALLIUM COMPOUNDS AREA.

3. BELGIANS POSED SPECIFIC QUESTIONS ON CARRIERS AND WHETHER US WAS DEALING WITH SILICON OR GALLIUM COMPOUNDS. US ANSWERED THAT IN THIS INSTANCE IT WAS SILICON. BELGIAN EXPERT CITED DIFFICULTIES IN SELECTING SAMPLES OF MATERIALS OF WHICH THERE ARE GREAT VARIETIES. SPECIFICATION CATALOGS ARE GENERALLY OBSOLETE AND DO NOT REFLECT DEVELOPING PRODUCTION TECHNIQUES WHICH PRODUCE BETTER MATERIAL. UK SUPPORTED BELGIUM AND REFERRED TO EVIDENCE SUBMITTED IN ROUND I. UK EXPERT STATED BLOC SAMPLES THEY HAD EVALUATED WERE OF SAME QUALITY AS "HOMEGROWN" MATERIAL AND WAS SURPRISED AT DIFFERENCES FOUND BY US. UK CIRCULATED AN ARTICLE FROM THE JOURNAL "NATURE" CONCERNING SOVIET EXPERIENCE WITH GALLIUM NITRIDE (TO BE CARRIED BACK BY DYTRT). GERMANY
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ECHOED BELGIUM AND UK COMMENTS.

4. ALL DELEGATIONS, EXCEPT US, SUPPORTED BELGIAN PROPOSAL FOR DELETION OF SUBITEMS (A) AND (B). ITALY THOUGHT A PARAMETRIC APPROACH COULD BE ADOPTED. US SAID IT WOULD LOOK AT THIS APPROACH BUT RECOGNIZED PROBLEMS INVOLVED. JAPAN REFERRED TO THEIR ATTEMPT IN REF D AND ASKED US TO SEEK THE MEANS TO FORMULATE COUNTERPROPOSAL FOR SUBITEM (B). BELGIUM HOPED THAT THE US MIGHT BE ABLE TO EXCLUDE SOME COMPOUNDS ENTIRELY. THE UK TABLED A PROPOSAL THAT WOULD EXCLUDE CERTAIN GALLIUM COMPOUNDS, EXPRESSLY DIRECTED TOWARD LARGE MONOCRYSTALS USED TO PRODUCE LED COMPONENTS. JAPAN AND BELGIUM AGREED TO UK EXCLUSION NOTE. GERMANY, ITALY, FRANCE, CANADA, AND NE-

THERLANDS AGREED AD REF. US RESERVED. IN LIGHT OF SUP-
PORT FOR UK COMPROMISE, BELGIUM WITHDREW ITS PROPOSAL TO
DELETE (B) BUT MAINTAINED DEMAND FOR DELETION OF (A).
UK BILATERAL WITH US ON NOTE SHOWED THEIR INTEREST TO
BE IN LED TYPE STOCKS. UK DOES NOT WANT TO RE-
LEASE JUNCTION LASER ON MICROCIRCUIT DEVICE STOCKS.

5. ON US PROPOSAL FOR NEW SUBITEM (D), JAPAN WAS WITH
MAJORITY WHILE ALL OTHER DELGATIONS RESERVED. BELGIUM
ASKED WHAT THE SUBSTRATES WERE. US ANSWERED THAT THEY
WERE SINGLE CRYSTAL SAPPHIRES OR GARNETS. FRANCE ASKED
WHAT KIND OF RADIATION WAS INVOLVED, WHAT WERE THE IN-
TEGRATED ELECTRO-OPTICS, E.G. LED ARRAYS OR PHOTOCOUP-
LING, AND WERE THE ACOUSTIC MICROWAVE DELAY LINES UNDER
ITEM 1586? US ANSWERED THAT THE RADIATION HERE MEANT
THAT TYPE EMANATING FROM A NUCLEAR EVENT AND AS
APPLIED TO PROTECTING ELECTRONICS ASSOCIATED WITH BAL-
LISTIC MISSILES. INTEGRATED ELECTRO-OPTICS HAD TO DO
WITH PHOTOCOUPLING NOT LED ARRAYS. YES, MICROWAVE DE-
LAY LINES MADE FROM THIS MATERIAL WOULD BE UNDER 1586.
FRENCH AND US DELEGATIONS EXCHANGED COMMENTS ON 1586
DEVICES WITH US POINTING OUT THAT NEW SUBITEM DEALS WITH
BASIC MATERIALS NOT DEVICES, HENCE RELATIONSHIP OF QUES-

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TIONS SEEMED NONRELEVANT. US, HOWEVER, WOULD STUDY
RELATIONSHIP OF SUBJECT MATERIALS WITH GARNETS IN 1586.

6. NETHERLANDS ASKED WHAT WAS MEANT BY INSULATING SUBSTRATES, I.E. WAS THIS AN OXIDE LAYER ON ANOTHER MATERIAL AND WHAT PART OF THE COMPOSITE WAS MONOCRYSTALLINE? US ANSWERED THAT ENTIRE SUBSTRATE WAS AN INSULATING MATERIAL AND THAT THE SUBSTRATE WAS MONOCRYSTALLINE UPON WHICH WAS GROWN A MONOCRYSTALLINE EPITAXIAL LAYER OF SEMICONDUCTING MATERIAL.

7. UK ASKED IF THE COMPOSITE WAS A RAW MATERIAL OR BUILT UP FROM INDIVIDUAL SUBSTANCES AND IF THE COMPOSITES ARE NOT COVERED ELSEWHERE, CITING SEVERAL 1500 SERIES COMPONENTS ITEMS. US DESCRIBED STRUCTURE OF THESE COMPOSITES AND SAID THEY DID NOT CONSIDER THIS MATERIAL AS A SPECIAL PART OR COMPONENT OF A DEVICE AND THUS IT WOULD NOT BE COVERED ELSEWHERE ON THE LIST. UK REQUESTED MORE DESCRIPTIVE INFORMATION AND DOCUMENTATION AS THEY DID NOT RECOGNIZE THE MATERIAL.
TURNER

8. TTG SHOULD RE-EVALUATE PROPOSED DELETION OF SUBITEM (A), SINCE OTHER DELEGATIONS ARE PRESSING HARD AND ARE ACTUALLY CLOSER TO THE BLOC SITUATION THAN US. US DEFENSES FOR SUBITEM (A) ARE WEAK, THIS BEING A MARGINAL
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RISK SUBITEM. ON SUBITEM (B), US DEFENSES ARE STRONGER AS EVIDENCED BY WILLINGNESS FOR COMPROMISE. SPECIFICATIONS OR PARAMETERS APPROACH FOR MORE COMMONLY USED, E.G. LED, GALLIUM COMPOUNDS MUST BE FOUND TO BREAK SERIOUS IMPASSE AND SHOW US GOOD FAITH TOWARD COOPERATION IN REFINING VERY OLD DEFINITION. (NOTE REF D (2)). ON NEW SUBITEM (D), DETAILED DESCRIPTIVE INFORMATION ON SUBJECT MATERIALS AND DEVICES SHOULD BE ACQUIRED FROM SPECIAL DEVICES DIVISION OF ROCKWELL INTERNATIONAL, TYCO, AND TEXAS INSTRUMENTS FOR SUBMISSION TO THE COMMITTEE. US ACCEPTANCE TO DELETE SUBITEM (A) WOULD BE HELPFUL TO THE ADDITION OF NEW SUBITEM.
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